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USING INNOVATIVE TEACHING METHODS IN BIOLOGY INCORPORATING INDEPENDENT LEARNING AND MULTIMEDIA PROGRAMS

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Abstract
The article is devoted to using innovative teaching methods and technologies in biology incorporating independent learning and multimedia programs. The author examines the characteristics, complexity, application of innovative software tools in the organization of the educational process. Particular attention is focused on the use of innovative technologies in biology classes.

Keywords: innovative teaching methods, independent learning, multimedia programs, empirical method, theoretical method, mathematical statistic method,communication technology, information technology

I.INTRODUCTION

The formation of a new education system presupposes significant changes in the organization of the educational process of a modern education system, which are designed to form an active personality with the basic knowledge and skills necessary for further education, professional development and mobility in a market environment. In this regard, the role of educational technologies is increasing in Uzbekistan**.**

The method of teaching biology is the science of the system of the process of teaching and upbringing, due to the characteristics of the school subject of biology.

The main function of science is research. The subject of the study of the methods of teaching biology is the theory and practice of teaching, upbringing, development of students in this subject. Philosophy is the theoretical basis for teaching biology.

The method of teaching biology is a pedagogical science that studies the process of teaching biology in order to:

a) establishing the laws of learning;

b) development in relation to certain historical conditions of educational and upbringing tasks, the content of academic subjects, programs, methods and methodological techniques.

The methods of teaching biology are considered:

a) the content of the subject;

b) the methods and forms of education;

c) The educational task of the subject of biology;

d) equipment and teaching aids.

The methods of teaching biology answers the questions:why study biology; what and how to teach; how to educate students using the object "Biology".

Methods of teaching biology uses the laws established pedagogy, psychology and physiology. But at the same time, it relies on the disciplines that are taught at school (physics, chemistry, history, natural history).

Research methods in teaching method of biology are:

a)empirical:

- retrospective method - research on literary sources;
- observation - direct, purposeful perception of the educational process;
- conversation - carried out after observation to clarify the details;
- interviewing - questions are determined in advance and asked sequentially;
- questionnaire survey - for mass data collection;
- study of school documents and students' work;
- experiment (natural and laboratory);

b)theoretical:

- comparison;
- opposition;
- analogy;
- systematization;
- classification;
- generalization;

c) mathematical statistics:

- registration;
- ranking,
- scaling.

Nowadays, there are several kinds of learning in teaching biology methods. We analyze computerized learning and multimedia training. Thus, computerized learning is characterized by the use of information generalizations applied to the study of the biological content (facts, concepts, processes, laws), the introduction of computer-based training methods (information technology) in the educational process.

Multimedia training - personalized way of learning, including the transfer of knowledge, formation of skills provided simultaneous use of visual, auditory, tactile sensations and thinking.

We know that, multimedia is a plurality of information media, content channels of information. The conditions created by the multimedia program make it possible to simulate a virtual learning environment. A virtual learning environment is an environment created by a student working with an automated learning system. Used

to convey instructional information only during that particular job. The presented types of teaching indicate a gradual shift in emphasis from the teacher's control of students 'volitional actions towards an increase in the activity of students' educational actions, the development of their self-organization in learning.

II.LITERATURE REVIEW

As we know, biology is the study of the interactions of living things with the environment. It is difficult to understand all the parts of the body and their functions when studying with the help of a textbook with one-dimensional images.Multimedia programs of teaching are pedagogical technologies that use special methods, software and technical means (film, audio and video - means, computers, telecommunication networks) to work with information. The use of these technologies determines the formation of a new type of information perception and thinking of the modern schoolchild. The process is based on the sign-symbolic transformation of educational material, the creation of a semiotic space, the influence of which is growing more and more.

The famous scientist A.E.Voikunsky notes that these technologies provide external memory, which is not only added to natural and cultural memory, but also decisively rebuilds it, restructures it; enhance the perceptual abilities of a person, open up the opportunity to plan and carry out mental activity in a different way.

Information and communication technologies make it possible to optimize the process of forming universal educational actions (UDA), first of all, cognitive and communicative ones. These technologies are especially effective when performing tasks of a practical nature, requiring to visually reflect the essential aspects of various objects, to trace the dynamics of the studied processes and phenomena.

Such differences are associated with the tasks of the educational process and visualization, which determine its type (cognitive, proving, illustrative), with the characteristics of information and stages of work on it, with individual differences of students. Multimedia animation models make it possible to form a complete picture of the biological process in the student's mind, interactive models make it possible to independently "design" the process, correct their mistakes, and self-study.

In general, information and communication technologies make it possible to rationally organize the cognitive activity of schoolchildren during the lesson; use computers to individualize the educational process; build an open education system that provides each student with his own learning path; turn to fundamentally new cognitive means; to study the phenomena and processes of micro - and macroevolution, within complex technical and biological systems based on the use of computer graphics and modeling; represent various biological processes that actually occur at a very high or low speed.

Nowadays, the ideas of programmed teaching in connection with the appearance of significantly powerful computer technology can solve the problems of optimizing and increasing the efficiency of the educational process in biology. The principles of multimedia learning are largely borrowed from the theory of programmed learning, so we will consider this problem in more detail.

The idea of programmed learning emerged in the early 1950s in the United States. Its author was Professor B.F.Skinner, a specialist in the field of learning psychology, who made a proposal to improve the efficiency of management of the educational process by constructing it in full accordance with scientific data on the learning process.

III.ANALYSIS AND DISCUSSION

Using innovative teaching methods in biology incorporating independent learning and multimedia programs improve learners' skills, knowledge about subject. Activities are varied to maintain interest and develop skills in comprehension, analysis, graph and table interpretation and problem solving. Videos, slide shows and two computer aided learning packages provide additional material for analysis in some of the weekly activities. Tutorials, beld fortnightly, provide a platform for the multimedia activities and interaction with smaller groups of students. However, there are no traditional practical classes in this subject.In this situation, students must be currently enrolled in, or have successfully completed, general Biology which does have weekly practicals throughout the year.

Timing of activities, tutorials and material submitted for assessment were designed to help motivate learners, with a combination of attendance, submitting independent work and feedback in tutorials.

A final assessment examination, based on subject and tutorial material and content from the activity manual, contributed 87% of students' assessments. Regular meetings between tutors to discuss assessment guidelines ensured fair assessment. Questions on both the final examination paper and the weekly activities required students to demonstrate their understanding of the subject, accessing information from a number of sources, and presenting answers in a variety of styles (short answer, notes, essays, reports, presentation of data).

Teachers need to create live classrooms using projectors and information and communication technologies to teach more effectively.

To do this, science teachers need to learn to use a variety of software and other Web tools, such as Word, Excel, Power Point, Flash, Movie Maker, to teach.

During the experiment of using innovative teaching methods in biology incorporating independent learning and multimedia programs we achieve following results:

№	Number of groups and respondents	Levels and number of eligible students			Learning Percentage
		High	Medium	Low	
1.	Experiment (n1) 70people	33	19	18	87%
2	Control (n2) - 70 people	18	19	33	75%

In this results we can see that, the use of information and communication technologies expands students' ability to imagine, abstract, and memorize processes such as cells, tissues, chemical elements, atoms, molecular structures, metabolism and energy, photosynthesis, and protein biosynthesis; allows for re-learning and filling gaps in students' knowledge, if necessary, taking into account the motivation and level of mastery of students; virtualization of biological processes in the form of animations prepares students for visual thinking and full mastery of educational material; the use of animation in biology lessons leads to the activation of students' cognitive activity at all stages of the lesson.

IV.CONCLUSION

In conclusion, we said that, in Biology innovative teaching methods incorporating independent learning and multimedia programs can be used in all forms of teaching, including in-class, out-of-class, out-of-class and out-of-school activities. It can also be used at all stages of the lesson, for example, to reinforce students 'knowledge of a previous topic, to learn a new topic, to reinforce, monitor, and evaluate students' knowledge of a new topic.

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